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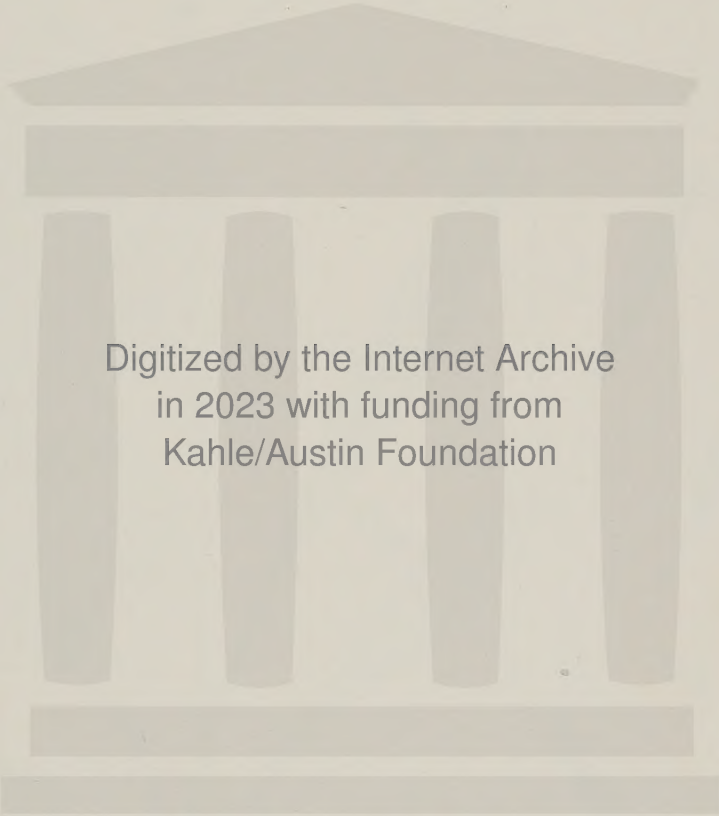
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SOLIDAGO PURSHII: FIG. 1, TYPE of *S. humilis* Pursh, basis of *S. Purshii*, with annotation by Asa Gray, \times ca. $\frac{1}{2}$; FIG. 2, recent specimen, \times 1, from TYPE-REGION; FIG. 3, portion of inflorescence, \times 3, from latter plant.

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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF
HARVARD UNIVERSITY—NO. CLXIX.

PART II. STUDIES OF EASTERN AMERICAN PLANTS

M. L. FERNALD

(Continued from page 85)

5. SOME NORTHERN ASTEREAE (PLATES 1146–1150)

SOLIDAGO PURSHII, NOT *S. CHRYSOLEPIS* (PLATE 1146).—Mr. David Erskine kindly calls to my attention a lapse in my recent analysis of the nomenclature of the boreal virgate goldenrod which long but incorrectly passed as *Solidago uliginosa* Nutt. In RHODORA, xlix. 294 (1947), in pointing out some of the morphological characters which separate this essentially northern and chiefly calcicolous species from the mostly more southern and oxylophytic true *S. uliginosa* (*S. neglecta* Torr. & Gray; *S. uniligulata* (DC.) Porter), I overlooked the ultimate result, as regards the former species, of an analysis of a very confused situation regarding the publication and interpretations of *S. humilis* Pursh, Fl. Am. Sept. 543 (1814), not Miller (1768), which I had published in RHODORA, x. 88–91 (1908).

There, unaware that the type of *Solidago uliginosa* Nutt. was characteristic *S. neglecta*, I was following the traditional interpretations, and was demonstrating that the technical type of *S. humilis* Pursh, not Miller, is the small Newfoundland specimen collected by Banks. It, therefore, followed that, when Porter substituted for the name *S. humilis* Pursh, without citation of anything but the Pursh reference, the name *S. Purshii* in Bull. Torr. Bot. Cl. xxi. 311 (1894), the latter name, nomenclaturally,

went back to the Pursh type (the Banks specimen), our FIG. 1, \times ca. $\frac{1}{2}$. Immediately to confuse the situation, however, the name *S. Purshii* was taken up, as in Britton & Brown, Ill. Fl. iii. 337, fig. 3687 (1898), for the wholly different, low and glutinous plant, quite unknown from Newfoundland, which had been erroneously passing as "*S. humilis*"; this continental narrow-leaved glutinous plant apparently correctly called *S. racemosa* Greene, Pittonia, iii. 160 (1897).

Although in 1908 I had the typification of *Solidago humilis* Pursh (= *S. Purshii* Porter) correctly worked out, I had forgotten in 1947 my conclusion from the very complicated bibliography. It is, however, quite clear, as Mr. Erskine indicates, that the name *SOLIDAGO PURSHII* Porter (1894) must be used for the long misnamed boreal and calcicolous "*S. uliginosa*" instead of the much later *S. chrysolepis* Fernald in Ottawa Nat. xix. 168 (1905). Banks collected in southeastern Labrador and along the north-eastern coast of Newfoundland. His plant, TYPE of *S. humilis* Pursh, not Miller, consequently of *S. Purshii* Porter, with the annotations by Asa Gray discussed by me in 1908, is shown, \times ca. $\frac{1}{2}$, as FIG. 1. Beside it is a modern specimen from north-eastern Newfoundland (Quirpon Island, *Fernald & Long*, no. 29,114), \times 1 (FIG. 2), with the summit of the thyrses shown, \times 3, as FIG. 3. Both plants are dwarfs from bleak habitats but that they are reduced specimens of the boreal species which for nearly a century incorrectly passed as "*S. uliginosa*" can scarcely be questioned.

ASTER AZUREUS Lindl., forma **laevicaulis**, f. nov., caulibus laeviusculis sublucidis.—TYPE from ILLINOIS: Fountaindale, Winnebago Co., 1867, *M. S. Bebb* in Herb. Gray.

An isotype of *Aster azureus* from St. Louis, *Drummond*, shows it to be the form with harshly scabrous stem, which was separated from the more widely dispersed plant with smooth and lustrous stems as *A. azureus scabrior* Engelm. ex Burgess in Small, Fl. Se. U. S. 1215 (1903). Engelmann, presumably realizing that the Drummond type was the form with "extremely rough" stem, seems not to have published the name. This, typical *A. azureus*, is apparently less abundant than the smooth-stemmed forma *laevicaulis*. At least, in the Gray Herbarium there are twice as many specimens of the latter as of the former.

A. AZUREUS Lindl., var. **poaceus** (Burgess), stat. nov. *A. poaceus* Burgess in Small Fl. Se. U. S. 1215, 1339 (1903).

As Burgess originally said, his *Aster poaceus* "Represents the extreme of attenuation among the kindred of *A. azureus*". Engelmänn had it as an unpublished variety of *A. azureus* from Texas; Hasse distributed it from Arkansas as "a form" of *A. azureus*; and Sereno Watson marked other Hasse material as "*A. azureus*, var.—Chapman, f. Hasse". I agree with Engelmänn and Chapman.

A. CILIOLATUS Lindl., forma **comatus** (Fern.), stat. nov. *A. Lindleyanus* T. & G., var. *comatus* Fern. in RHODORA, vi. 142 (1904).

A. TARDIFLORUS L., forma **vestitus** (Fern.), stat. nov. Var. *vestitus* Fern. in RHODORA, i. 188 (1899).

A. PUNICEUS L., forma **candidus**, f. nov., ligulis albis.—Washington Co., NEW YORK: wet place, J. D. Pierce's farm, West Road, Welch Hollow, north of Fort Anne, September 26, 1916, *Stewart H. Burnham* in Herb. Gray.

Forma *candidus* is the albino of typical *Aster puniceus*. It should not be confused with *A. puniceus*, var. *lucidulus* Gray, forma *albiflorus* R. Hoffm. in Proc. Bost. Soc. Nat. Hist. xxxvi. 339 (1922), which is the albino of *A. puniceus*, var. *firmus* (Nees) Torr. & Gray, from which I am unable to separate var. *lucidulus*, except as a minor form. When, in Am. Midl. Nat. xxvi. 414 (1941), Shinnars published the combination *A. puniceus*, f. *albiflorus* (Farw.) Shinnars, based on *A. puniceus*, var. *albiflorus* Farwell in Rep. Mich. Acad. Sci. xvii. 171 (1916), he apparently overlooked the fact that the identical formal name may not be used twice within a single species.

A. PUNICEUS L., forma **demissus** (Lindl.), stat. nov. Var. *demissus* Lindl. in Bot. Reg. xix. t. 1636 (1833).

A. PUNICEUS, var. *FIRMUS* (Nees) T. & G., forma **lucidulus** (Gray), stat. nov. *A. puniceus*, var. *lucidulus* Gray, Syn. Fl. i². 195 (1884). *A. lucidulus* (Gray) Wiegand in RHODORA, xxvi. 4 (1924).

I am quite incapable of separating *Aster lucidulus* as a species or even as a geographic variety. Its range essentially coincides with that of var. *firmus* (var. *laevicaulis* Gray), the only tangible difference being its entire, instead of more or less serrate, leaves.

A. ERICOIDES L., forma **prostratus** (Ktze.), stat. nov. *A. multiflorus* Ait. β . *prostratus* Ktze. Revis. Gen. Pl. i. 313 (1891).

Forma *prostratus*, as described by Otto Kuntze from Nebraska, "Caulis prostratus ramis erectis" is a very depressed and wind-swept form, strikingly unlike the sturdy upright plant. Such closely matted extremes occur in bleak habitats (like crests of sea-cliffs) in New England.

A. ERICOIDES L., forma **exiguus** (Fern.), stat. nov. *A. multiflorus* Ait., var. *exiguus* Fern. in RHODORA, i. 187 (1899).

Although the combination *A. exiguus* (Fern.) Rydb. in Bull. Torr. Bot. Cl. xxviii. 505 (1901) rests nomenclaturally on *A. multiflorus*, var. *exiguus*, the plant Rydberg describes can hardly be the same. Forma *exiguus* is the ascending plant with heads mostly solitary at the tips of the branches.

A. CAERULESCENS DC., var. **angustior** (Wieg.), comb. nov. *A. praealtus* Poir., var. *angustior* Wiegand in RHODORA, xxxv. 24 (1933).

For discussion of the specific names involved see Shinnars in RHODORA, li. 91 (1949).

A. CAERULESCENS, var. **subasper** (Lindl.), comb. nov. *A. subasper* Lindl. in Hook. Comp. Bot. Mag. i. 97 (1835). *A. salicifolius* Ait., var. *subasper* (Lindl.) Gray, Syn. Fl. i². 188 (1884). *A. praealtus* Poir., var. *subasper* (Lindl.) Wieg. in RHODORA, xxxv. 24 (1933).

ASTER FOLIACEUS OR A. CRENIFOLIUS IN THE NORTHEAST—WHICH? (PLATES 1147–1150).—In RHODORA, xvii. 13–16 (1915) I pointed out that *Aster foliaceus* Lindl. in DC. Prodr. v. 228 (1836), described from Unalaska with leaves oblong-lanceolate, clasping and subserrate, the heads terminating axillary branches, the phyllaries ("invol. squamis") foliaceous and glabrous, is very characteristic also in Labrador, Newfoundland, eastern Quebec and northern New England. At that time I noted some varieties differing from the variations which occur in cordilleran North America. Typical *A. foliaceus* sensu Fernald (as well as Lindley, Gray and others) and its vars. *arcuans* and *subpetiolatus* Fern. l. c. are widely distributed in the Northeast (just as are many other species in many genera which are also Alaskan). Var. *subgeminatus* Fern. l. c. 16, with the lower leaves having long

subpetiolate bases and the involucre only 5–6 mm. high and of very slender nonfoliaceous phyllaries, as opposed to sessile leaves and broad foliaceous phyllaries 8–15 mm. long, is wholly distinct, being the endemic western Newfoundland representative of *A. ciliolatus* Lindl., *A. subgeminatus* (Fern.) Boivin in *Naturaliste Canad.*, lxxv. 211 (1948). The rarest and most doubtful (probably extinct) eastern variety under *A. foliaceus* is var. *crenifolius* Fern. l. c. 15, an extreme plant (PLATE 1147), differing from the others in its elliptic and bluntish short leaves pilose on midrib and stronger nerves beneath (FIG. 2, $\times 5$) and with closely crenate margins. This extreme plant, doubtfully belonging with the others, and perhaps of hybrid origin, was found by Collins, Pease and the writer forty-five years ago as a single clone on the treacherously overhanging crest of a deeply undercut and rapidly disintegrating soft red sandstone margin of the Gulf of St. Lawrence, where the sea was so rapidly breaking down the coast-line that the inhabitants were moving farther back. It was presumably long ago destroyed.

Although all these plants of the East were treated by me as varieties of *Aster foliaceus*, a more recent and much younger student, who has never seen the eastern plants growing, has announced that

"I noticed that the eastern American plants which had been referred to *A. foliaceus* Lindl. could generally be recognized at a glance, purely by their habit. These specimens furthermore, were in some respects (such as the commonly toothed leaves) nearer to *A. douglasii* Lindl. than to *A. foliaceus*.

"Upon re-examination of these eastern plants, I am convinced that they should be distinguished specifically from their western relatives."—Cronquist in *Bull. Torr. Bot. Cl.* lxxiv. 142 (1947).

Consequently, we get the following deduction:

"*Aster crenifolius* (Fern.) Cronquist, comb. nov. *A. foliaceus* var. *crenifolius* Fern. (*Rhodora*) 17: 15. 1915."

There is the verdict of one who unites most morphologically distinct species in *Antennaria*¹, who similarly treats two remarkably distinct and geographically and ecologically usually separated species of *Solidago*², who can see no difference between the

¹ For discussion of such work see Fernald in *RHODORA*, xlvi. 221–235 and 239–247, plates 912–962 (1945)—repr. as *Contrib. Gray Herb.* no. clvii, pt. 1.

² For discussion see Fernald in *RHODORA*, xlix. 294–297 (1947); also this no. p. 93.

Atlantic North American *Petasites palmatus* and the abundantly distinct Pacific American *P. speciosus* (Nutt.) Piper¹, and whose pronouncements on many other *Compositae* have shown a "lumping" tendency beyond the comprehension of those with a vastly greater experience with the plants concerned. Can it be that the pendulum is swinging as far or farther in the opposite direction? It, at the time of this writing, being the Christmas season with its expected charity toward all, I will defer to another time further discussion of the amazing treatments of *Petasites* and some other genera. The seemingly conclusive statement, however, that in "the eastern plants [of *Aster foliaceus*] . . . their greatest similarity is not to *A. foliaceus* proper" (Cronquist, p. 142) needs immediate consideration, lest credulous readers adopt the not too carefully made conclusion.

If our eastern plant really differs from *Aster* "*foliaceus* proper" in "habit", in being "recognized at a glance" and in "commonly toothed leaves", it is noteworthy that so much of it should have the leaves entire or barely few-toothed, and should thus fit Lindley's definition of his *A. foliaceus* with leaves "subserratis". It is a striking fact also that sheet after sheet of specimens of the Alaskan plant, *A. "foliaceus* proper", can be placed side-by-side with sheets from Labrador, Newfoundland or eastern Quebec so that, if the labels are covered, anyone of ordinarily keen perception would be incapable of saying whence they came. And the very practical eye of the camera would be equally unable to detect a specific difference. Thus, in PLATE 1148, FIG. 1 is the summit of a plant, $\times 1$, from the type-region of *A. foliaceus*, marked by Cronquist *A. foliaceus* var. *typicus*, this specimen being Jepson, no. 307, from Unalaska; FIG. 2 is the summit, $\times 1$, of Fernald & Wiegand, no. 4114^a from Bonne Bay, Newfoundland, originally called *A. foliaceus* but annotated by Cronquist as *A. crenifolius*. What is the *specific* difference, except that the Newfoundland plant has entire leaves, which is against the rule for *A. crenifolius*? In PLATE 1149, FIG. 1 is the summit of a plant from Le Conte Bay, Alaska, Mr. & Mrs. E. P. Walker, no. 880 (also validated as var. *typicus*); but beside it is a photograph (FIG. 2) of the summit of a specimen from Rivière Cap Chat, Matane County, Quebec, Fernald & Smith, no. 26,047. Again

¹ See Cronquist in RHODORA, xlviii. 125 (1946).

why are they of different species? In PLATE 1150, FIG. 1 is from the summit of a plant from Lituya Bay, Alaska, *R. H. Bates*, no. 151, also validated by Cronquist as var. *typicus*: while FIG. 2 is the lower leaf-surface, $\times 5$. Beside it, as FIGS. 3 and 4, are a bit from the summit of *Fernald & Wiegand*, no. 4129 from Blanc Sablon, at the western entrance to the Straits of Belle Isle, this originally and correctly identified as *A. foliaceus* but that objectionable identification "corrected" by Cronquist to *A. crenifolius*: FIG. 4 being the lower leaf-surface, $\times 5$. Take your choice; to most botanists they are of the same boreal plant.

Whatever typical *Aster crenifolius* (a portion of the TYPE, $\times 1$ and the midrib beneath $\times 5$, as PLATE 1147) may have been or may prove to be, whether a hybrid of *A. puniceus* or a more stable plant, most of the plants of our Northeast seem to me, as they did when I first studied them, quite indistinguishable from *A. "foliaceus proper"* or *A. foliaceus*, var. *typicus* of Alaska. Those who see "at a glance" a very distinct species in the East, must deduce something tangible before they can be safely followed. The identities of species of the region centering about the Gulf of St. Lawrence with remotely isolated species of the Alaskan area (*Poa eminens* J. S. Presl, *Hordeum brachyantherum* Nevski, *Listera borealis* Morong, *Epilobium glandulosum* Lehm., *Senecio Pseudo-Arnica* Less. and *S. resedifolius* Less., etc. etc.) are so numerous that an identity in *Aster* is to be expected.

A. JOHANNENSIS Fern., var. **villicaulis** (Gray), comb. nov.
A. longifolius Lam., var. *villicaulis* Gray, Syn. Fl. i². 189 (1884).

Although *Aster johannensis* in its typical form (including *A. gaspensis* Victorin) is a dominant species from southern Labrador to Saskatchewan, south to Newfoundland, Prince Edward Island, northern and western New England, northern New Jersey, New York and southern Ontario, being in large part what has passed as *A. longifolius*, the densely villous var. *villicaulis* is abundant along rivers of eastern Quebec, New Brunswick and northern New England, not being known through the broad range of the species.

A. NEMORALIS Ait., forma **albiflorus** f. nov., ligulis albidis.—MAINE: south shore of Jordan Pond, Mt. Desert Island, September 10, 1894, *E. L. Rand*, TYPE in Herb. N. E. Bot. Club.

At its start the name *Aster nemoralis* Ait. Hort. Kew. iii. 198 (1789) was given as a result of considerable misinformation regarding the plant. The primary diagnosis was accurate enough for the full sheet which has been identified at the British Museum (Natural History) as the TYPE; but the trivial name given, the translation "Wood Star-wort" and the "Obs. . . . *Radius caeruleus*" were most unfortunate for a plant which characterizes sphagnous bogs and has lilac-pink ligules. On account of the supposed woodland-habitat and the blue ligules Willdenow in his *Species Plantarum*, iii³. 2021 (1803) took up *A. nemoralis* for the stiff plant of dry open ground or thin woods, with blue ligules, which had already been described as *A. linariifolius* L. Sp. Pl. 874 (1753); but since Aiton's plant came from Nova Scotia, where *A. linariifolius* is unknown, that interpretation can be dismissed. Other names were early published for the species which Aiton had, but misunderstood: *A. uniflorus* Michx. Fl. Bor.-Am. ii. 110 (1803) "*Hab. in vastis sphagnosis*", but Michaux's name was antedated by *A. uniflorus* Moench. Meth. 602 (1794); *A. ledifolius* Pursh, Fl. Am. Sept. ii. 544 (1814), "In sphagnous bogs and about mountain-lakes . . . rays lilac or reddish-purple", but Pursh's name was illegitimate for he cited as an exact synonym *A. nemoralis* Ait. and as the basis of his *A. ledifolius* β . *uniflorus* the *A. uniflorus* Michx. Everyone who knows the plant in the field agrees that it is not a species of the woods: "rayons violets ou roses . . . caractéristique des tourbières".—Victorin, Fl. Laurent. 612 (1935); "bogs and marshes, lake margins, and dominant on peaty barrens"—Roland, Fl. Nova Scotia, 494 (1947); "Peat bogs and open swamps"—Rand and Redfield, Fl. Mt. Desert, 116 (1894); "**Bog Aster** . . . distinctly the Aster of the Cedar Swamps and cold bogs"—Stone, Pl. So. New Jersey, 759 (1912).

In spite of the misleading name and the presumably incorrect description of the color of the ligules, there is no question that the plant preserved at South Kensington as the TYPE of *Aster nemoralis* otherwise definitely matches the description given by Aiton. Disturbed by the name used by him and by his *blue* ligules, I appealed to Dr. George Taylor, Deputy Keeper at the British Museum. He most kindly sends me beautifully clear photographs, one of the full sheet, one of an enlargement, and I

see at the bottom of the full sheet in my own handwriting "nemoralis", placed there in 1930! Dr. Philipson, in charge of the *Compositae*, compared fragments which I had sent of the Bog-Aster, *A. nemoralis* as generally understood, and of *A. Blakei* (Porter) House, which often grows in low woods, and writes: "The type appears to correspond to Fernald et al. 22805 (. . . 'nemoralis'); not at all to Fernald and Long 2466 (. . . 'Blakei')". It is wisest, therefore, to retain the name *Aster nemoralis* in its established sense. It is hardly more inappropriate than *Solidago nemoralis* Ait. for a species which abounds on dry open and barren habitats.

A. ACUMINATUS Michx., forma **subverticillatus**, f. nov., foliis imis valde reductis, foliis primariis subapproximatis internodiis 1–20 mm. longis, laminis 0.6–1.5 dm. longis.—Frequent through much of the range of the species. TYPE from MASSACHUSETTS: Lincoln, October 5, 1902, *Emile F. Williams* in Herb. Gray.

Aster acuminatus has two strikingly different but freely intergrading forms. Michaux described it "foliis omnibus conformibus" and my memorandum made when I studied the Michaux Herbarium in 1903 was: "The regularly leafy plant". The "regularly leafy plant" has the leaves almost uniformly scattered up the stem, the lower ones only slightly smaller than the median and upper ones, with the upper internodes mostly 1–3 cm. long and the larger blades mostly 0.5–1 dm. long. This typical *A. acuminatus* is shown in Britton & Brown, Ill. Fl. iii. fig. 3789 (1898) and in House, Wild Fl. N. Y. ii. pl. 247 (1920)¹. A very characteristic illustration of forma *subverticillatus* will be found as *A. acuminatus* in Hooker in Curtis's Bot. Mag. liv. t. 2707 (1827).

A. ACUMINATUS, var. **magdalenensis**, var. nov., foliis regulariter distantibus late ovalibus acutis vel breviter acuminatis.—MAGDALEN ISLANDS, QUEBEC: TYPE from dry clearing, Étang du Nord, Grindstone Island, *Fernald, Bartram, Long & St. John*,

¹ NOTE ON DATES OF ISSUE OF HOUSE'S WILD FLOWERS OF NEW YORK.—In view of the date 1918 on the title-pages of both vols. 1 and 2 of House, Wild Flowers of New York, Univ. N. Y., State Museum, Mem. 15, it is important to note that the printed "Statement", dated from Albany, July 30, 1920, says that at that date "Volume I . . . is now ready for delivery". A similar "Statement", postmarked Dec. 3, 1920, says "It is expected that volume 2 will be issued in the course of three months". However, the copy in the library of the Gray Herbarium was received on the 15th of December, 1920.

July 25, 1912, no. 8159 in Herb. Gray. Other numbers are from Grindstone, Grindstone Island, *Fernald, Long & St. John*, no. 8160, and Ile Brion, *Victorin & Rolland*, no. 9807.

In typical *Aster acuminatus* the principal leaves are oblong-lanceolate to oblanceolate or narrowly subelliptic and long-acuminate, one fifth to scarcely half as broad as long. In var. *magdalenensis* they are broadly oval, nearly half as broad as long, and merely acute or very short-acuminate.

A. UMBELLATUS Mill., forma **intercedens**, f. nov., a forma typica recedit foliis subtus plus minusve pilosis.—TYPE from NEWFOUNDLAND: thicket on barrens at base of the serpentine tablelands, Bonne Bay, August 27, 1910, *Fernald & Wiegand*, no. 4131 in Herb. Gray.

Typical *Aster umbellatus* has the leaves glabrous beneath or merely pubescent along the midrib, but in more exposed situations from Newfoundland and from St. Paul's Island, Cape Breton, to the Mistassini Territory of Quebec (and probably beyond) it frequently has considerable pilosity on the lower surfaces of the leaves. It thus makes a strong approach to the northwestern var. *pubens* Gray, Syn. Fl. i². 197 (1884), although the hairs are coarser. The latter plant, when only the most extreme and relatively few representatives from different stations are separated from the mass of partly atypical material, has the upper leaves soft-pilose or tomentulose beneath and the phyllaries with varying amounts of pubescence on the back; while Cronquist, raising it to specific rank as *A. pubentior* Cronq. in Bull. Torr. Bot. Cl. cxxiv. 147 (1947), adds that its "heads are mostly 12–22-flowered, with 4–7 rays and 8–15 disk flowers, instead of 23–54-flowered, with 7–14 rays and 16–40 disk flowers" and also that, "Although there is some slight failure in the distinction", *A. pubentior* is a good species. In view, however, of the occurrence in otherwise perfectly good var. *pubens* of 33 flowers in a head (Clear Lake, Riding Mountain National Park, Manitoba, *Edith Scamman*, no. 2962), of 27 flowers in a head of plants with closely pubescent lower leaf-surfaces and pubescent phyllaries from the North Shore of Lake Superior (Schreiber, Thunder Bay Distr., Ontario, *Hosie, Losee and Bannan*, no. 348), of plants with all the characters of var. *pubens* but with 15 rays or ligules (north of Detroit Lakes, Becker County, Minnesota, *Philip Johnson*, no. 449), of several northwestern specimens with



Photo. B. G. Schubert

ASTER CRENIFOLIUS, all figs. from type: FIGS. 1 and 2, summits of plant, $\times 1$; FIG. 3, lower surface of leaf, $\times 5$.



Photo. B. G. Schubert

ASTER FOLIACEUS, summits of plants, $\times 1$: FIG. 1 from TYPE-LOCALITY, Unalaska; FIG. 2 from Newfoundland, this plant identified by Cronquist as *A. crenifolius* (see plate 1147).



Photo. B. G. Schubert

ASTER FOLIACEUS, summits of plants, $\times 1$; FIG. 1 from Alaska; FIG. 2 from Matane Co., Quebec, this plant identified by Cronquist as *A. crenifolius* (see plate 1147).



Photo, B. G. Schubert

ASTER FOLIACEUS: FIG. 1, summit of plant, $\times 1$, from Alaska; FIG. 2, lower surface of leaf of same plant, $\times 5$; FIG. 3, summit of plant, $\times 1$, from Straits of Belle Isle, southeastern Labrador Peninsula, this plant identified by Cronquist as *A. crenifolius* (see plate 1147); FIG. 4, lower surface of leaf of plant shown in FIG. 3.

leaves of *A. pubentior* but with glabrous-backed phyllaries, and of extreme eastern plants with glabrous leaves and backs of phyllaries but with fewer than 23 flowers—in view of this situation I am satisfied that Asa Gray was right in his disposition of the more extreme northwestern plant.

6. TRANSFERS AND MINOR VARIATIONS

ISOËTES MELANOPODA J. Gay & Dur., forma **pallida** (Engelm.), stat. nov. Var. *pallida* Engelm. in Trans. St. Louis Acad. Sci. iv. 387 (1882).

BOTRYCHIUM SIMPLEX E. Hitchc., forma **laxifolium** (R. T. Clausen), stat. nov. Var. *laxifolium* R. T. Clausen in Bull. Torr. Bot. Cl. lxiv. 277, pl. 7 (1937).

OSMUNDA REGALIS L., var. **SPECTABILIS** (Willd.) Gray, forma **nana**, f. nov., frondibus 1.5–3.5 dm. altis; pinnulis majoribus ellipticis vel oblongo-ovalibus 1.5–3 cm. longis, 0.8–1.1 cm. latis; panicula 5–10 cm. longa.—Alpine or bleak habitats of Newfoundland, Quebec and mountains of northern New England. TYPE from NEWFOUNDLAND: serpentine and magnesian limestone barrens, northeastern base and slopes of Blomidon (“Blow-meadow”) Mountains, Bay of Islands, August 2, 1910, *Fernald & Wiegand*, no. 2341 in Herb. Gray.

This very dwarf extreme is anything but regal or showy. It is the regular extreme on many mountains and in the type the fertile fronds reach a height of only 2 dm.

ACER RUBRUM L., forma **pallidiflorum** (K. Koch), stat. nov. Var. *pallidiflorum* K. Koch ex Pax in Engler, Bot. Jahrb. vii. 182 (1886).

PYROLA ASARIFOLIA Michx., var. **purpurea** (Bunge), comb. nov. *P. rotundifolia* L., β. *purpurea* Bunge in Mém. Sav. Étrang. ii. 542—repr. 20 (1835). *P. rotundifolia*, β. *incarnata* DC. Prodr. vii. 773 (1839). *P. asarifolia* Michx., var. *incarnata* (DC.) Fern. in RHODORA, vi. 178 (1904).

I am indebted to Dr. Hiroshi Hara for calling my attention to the earlier varietal name and to his generous suggestion that I publish the combination. Bunge's *P. rotundifolia*, β. *purpurea* was from the Altai region, DeCandolle's var. *incarnata* from Dahuria. It extends from north-central and eastern Asia into North America, crossing the continent northward and in our Northeast it too often passes into *P. asarifolia*.

VACCINIUM ANGUSTIFOLIUM Ait., var. **hypolasium**, nom. nov. *V. pensilvanicum* var. *myrtilloides* sensu Fernald in RHODORA, x. 148 (1908) and *V. angustifolium* var. *myrtilloides* sensu House in Bull. N. Y. State Mus. 243-244: 61 (1923), not *V. myrtilloides* Michx., basonym, which proves to be identical with *V. canadense* Kalm.

V. MYRTILLOIDES Michx., forma **chiococcum** (Deane), comb. nov. *V. canadense*, forma *chiococcum* Deane in RHODORA, iii. 266 (1901).

V. CORYMBOSUM L., var. **albiflorum** (Hook.), stat. nov. *V. albiflorum* Hook. in Curt. Bot. Mag. lxii. (n. ser. ix.), t. 3428 (1835). × *V. corymbosum*, forma *albiflorum* (Hook.) Camp in Am. Midl. Nat. xxiii. 177 (1940).

LIATRIS GRAMINIFOLIA (Walt.) Willd., var. **virgata** (Nutt.), stat. nov. *L. virgata* Nutt. in Journ. Acad. Nat. Sci. Phila. vii. 72 (1834).

Dr. Gaiser in RHODORA, xlvi. 250 (1946) places Nuttall's *Liatris virgata* in the synonymy of *L. graminifolia*, var. *dubia* (Barton) Gray, which Mr. Haskell Venard has shown is antedated by an earlier varietal name and becomes *L. graminifolia*, var. *racemosa* (DC.) Venard in RHODORA, li. 35 (1949). It seems to me, however, that var. *virgata* is a well marked variety. Barton's *L. dubia*, basis of var. *dubia*, has spiciform racemes; and DeCandolle, under his *L. spicata*, var. *racemosa* (cited by Gaiser as identical with *L. dubia* but on DeCandolle's p. 131, instead of 130) cited plates in the Botanical Register and Loddiges' Botanical Cabinet which are very similar to the Barton plate. Nuttall's *L. virgata* was "Remarkable for the decomposition of its raceme and the long leafy pedicels." Nuttall's type shows the long racemose branches of the panicle nearly 2 dm. long. Other plants from the Southeast (South Carolina, Virginia and the Pine Barrens of New Jersey) are similar, sometimes with the panicked branches nearer 3 dm. long.

L. BOREALIS Nutt., forma **albiflora** (Shinners), comb. nov. *L. novae-angliae* (Lunell) Shinners, f. *albiflora* Shinners in Am. Midl. Nat. xxix. 29 (1943).

L. ASPERA Michx., forma **Benkii** (Macbr.), comb. nov. *L. scariosa*, f. *Benkii* Macbr. in Field Mus. Pub. Bot. iv. 127 (1927).

MISTLETOE ON PERSIMMON

J. T. BALDWIN, JR.

Phoradendron flavescens (Pursh) Nutt. occurs from "central New Jersey to Ohio, Indiana and Missouri, south to Florida, Texas and New Mexico" (Britton and Brown, 1913). *Diospyros virginiana* L. is throughout this range except for the very southwestern portion (Sargent, 1922). Only four records of mistletoe on this persimmon are at hand.

Harper (1928) reported *Phoradendron* on *Diospyros* near North Alabama Junction, Tuscaloosa Co., Alabama; he stated in a letter of October 27, 1948, that "it may have been only one specimen on one tree". In 1917, near Keysville, Charlotte Co., Virginia, I found mistletoe growing on a persimmon, but I do not recall how many individual parasites there were. And on October 17, 1948, near Lake Drummond in the Great Dismal Swamp, Norfolk Co., Virginia, I saw two clumps of *Phoradendron* on a thirty-foot tree of *D. virginiana*. In both instances it is to be assumed that the mistletoe was referable to *P. flavescens*, for no other representative of the genus has been considered to be in Virginia. Mr. W. H. Pitman (letter of November 29, 1948) wrote me that some years ago in Surry Co., Virginia, he saw mistletoe on persimmon.

Inquiries addressed to Mr. C. C. Deam, Prof. M. L. Fernald, Dr. R. M. Harper, Mr. Bayard Long, Prof. Edgar T. Wherry—all with much field-experience within the ranges of these plants—brought no further record of mistletoe-persimmon association.

Curtiss (1878) wrote that mistletoe is abundant in Florida, "where it may be found on nearly every kind of tree", and recorded it as sometimes parasitic upon itself. Harper (1928) listed for Alabama nineteen genera (including two that are cultivated) as supplying one or more host species for mistletoe, and in the letter cited above he added *Hamamelis* as a twentieth genus. Deam (1940) indicated that four genera—including *Juglans* not mentioned by Harper—are known to serve in Indiana as hosts for mistletoe. In the northeastern part of its range (in New Jersey and Pennsylvania) mistletoe is invariably on *Nyssa sylvatica* and occasionally on *Acer rubrum*: both Mr. Long and Doctor Wherry have written me this.

Harper (1928) stated with respect to *Phoradendron* in Alabama: "it may be divisible into several species, which are to all appearances much alike but cannot be made to grow on trees too different from that to which they have been accustomed". Small (1933) recognized for Florida two species besides *P. flavescens*. Willis (1919) estimated for *Phoradendron* about one hundred species, all of them American.

That *Phoradendron* has such a series of hosts in a part of the area under discussion and in other regions evidences a restricted preference suggests considerable genotypic variation, which may be beyond the specific limits of *P. flavescens*. This becomes all the more significant since the greatest variety of hosts is concentrated in the southern part of the range and where contact with other recognized species is not to be unexpected. It could be that introgressive hybridization has occurred. And surely birds would have assured trial plantings of segregants on a wide variety of hosts. Indications are that only a rare genotype could grow on *D. virginiana*. But it must be remembered, too, that this persimmon is extremely variable and has intraspecific polyploid races (Baldwin and Culp, 1941). To accord with this idea of introgression the mistletoes on rare hosts should be the extremes among populations.

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COLLEGE OF WILLIAM AND MARY,
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SOME GRASSES NEW TO WEST VIRGINIA.—As the following grasses are not included in "West Virginia Grasses" published in 1944 by Dr. Core et al. it may be of interest to record their occurrence in that state.

BROMUS DUDLEYI Fernald. When this was described as a

new species in 1930 by Professor Fernald he gave its southern limit as New England and New York and stated “it has been confused with and usually distributed as *Bromus ciliatus*”. At Capon Springs, Hampshire County, this was growing in rich woods. As Dr. Core states that *B. ciliatus* is “common throughout the state” it is probable that a further examination of material will show that *B. Dudleyi* occurs generally in the Alleghanies to Virginia and West Virginia.

GLYCERIA ACUTIFLORA Torr. In the summer of 1920 while at White Sulphur Springs, Greenbrier County, I found this in a small pool of water on the northerly slope of Kate’s Mountain. It has been recorded from Kentucky and Tennessee but is not recorded from West Virginia by Dr. Core or by Hitchcock in his Manual of Grasses of the United States.

PANICUM OLIGOSANTHES Schultes, var. SCRIBNERIANUM (Nash) Fern. First collected in 1945 at Capon Springs, Hampshire County, growing in dry gravelly soil and again in 1948 in Pendleton County where it was quite abundant in a sandy field. I have also found it on the easterly side of the Alleghanies in Frederick County, Virginia.—FRANCIS WELLES HUNNEWELL, Gray Herbarium.

ADDITIONS TO THE HARRIS “FLORA OF WINDHAM, NEW HAMPSHIRE.”

A. R. HODGDON AND HERBERT FRIEDLANDER

The “Flora of Windham”¹ is one of the few truly representative local compilations to have appeared in New Hampshire botany. Moreover, it seems to have been the most comprehensive one to confine itself to the plants of a single township.

William Samuel Harris, the author, taught for a number of years at Coe’s Academy in Northwood. That he was a man of considerable versatility and breadth of interest is indicated by the following brief passage concerning his collections quoted from another part of the same work in which his flora appeared: “—of minerals and geological specimens there are four hundred, named and classified, some of them very choice. The antiqua-

¹ In Morrison, L. A. “Supplement to the History of Windham in New Hampshire” pp. 69–97, 1892.

rian department of the collection contains old books of the last century, continental currency, coins, old china and articles of household use." Mr. Harris was an amateur botanist of no mean ability, as shown by the considerable number of interesting species reported by him. Among the hitherto unreported local and significant species collected by him in Windham are: *Eleocharis tuberculosa*, *Paronychia canadensis*, *Viola palmata*, *Chimaphila maculata*, *Myosotis stricta* and *Eupatorium sessilifolium*.

Recently the senior author of this article became acquainted with Mr. John Hayden, a relative of the late Mr. Harris, who is now in possession of the 618 specimens which comprise the Windham collection. Through his generosity the authors have been permitted the loan of the collection for study. Most of the species reported in the "Flora" are present in the collection, with the exception chiefly of a number of common kinds. However, it was soon discovered that a very considerable number of Mr. Harris' collections were made later than the year 1892 and that these, for the most part, represent species not reported in the published list. Although the individual specimens do not all have accompanying geographical data, the collection, as a whole, is prefaced by a statement of Mr. Harris to the effect that every specimen "was gathered while growing in a wild state within the limits of the township of Windham in Rockingham County, New Hampshire". It is concluded, therefore, that the later collections represent added records for the township. A supplement listing the additional species will more nearly complete the work of Mr. Harris and also record more adequately a fragment of the New Hampshire flora.

Inasmuch as the identifications of the earlier specimens of the published list were essentially correct, it seemed unnecessary to revise the nomenclature of the original check list or alter it in any way. The later collections herein reported, however, are brought up to date, the accepted current binomial or varietal name being printed first if different from that employed by Harris and the name he used then given in italics.

Each plant is neatly mounted on one-half of a folded herbarium sheet. The specimens are sometimes fragmentary, which in a few instances makes determination difficult, but they are almost without exception carefully selected and beautifully

mounted. They are arranged according to the Bentham & Hooker system then in use in the 6th edition of Gray's Manual. The entire collection is housed in ten neatly-made wooden boxes designed by Mr. Harris to exactly fit the folded herbarium sheets.

To the original 610 species of the published flora of Windham thus it is now possible to add 115 more, bringing the published total to 725.

LIST OF HITHERTO UNREPORTED WINDHAM PLANTS IN THE W. S. HARRIS HERBARIUM

1. PTERIDOPHYTA

1. *Lycopodium tristachyum* Pursh
2. *Selaginella apoda* (L.) Fernald (*S. apus*)
3. *Ophioglossum vulgatum* L. var. *pseudopodium* (Blake) Farwell (*Ophioglossum vulgatum*)
4. *Cystopteris fragilis* (L.) Bernh.
5. *Athyrium thelypteroides* (Michx.) Desv. (*Asplenium thelypteroides*)¹
6. *Pteretis pensylvanica* (Willd.) Fernald (*Onoclea Struthiopteris*)

2. SPERMATOPHYTA

7. *Potamogeton amplifolius* Tuckerm.
8. *P. Berchtoldi* Fieber var. *tenuissimus* (Mert. & Koch) Fernald. (*P. pusillus*) At least part of the material on the herbarium sheet is var. *tenuissimus*, the remainder may be closer to var. *polyphyllus* (Morong) Fernald.
9. *Najas gracillima* (A. Br.) Morong (*Najas indica* var. *gracillima*)
10. *Glyceria acutiflora* Torr.
11. *Glyceria obtusa* (Muhl.) Trin.
12. *Glyceria pallida* (Torr.) Trin.
13. *Briza media* L.
14. *Hystrix patula* Moench (*Asprella Hystrix*)
15. *Trisetum spicatum* (L.) Richter var. *molle* (Michx.) Beal (*Trisetum subspicatum* var. *molle*)
16. *Cinna arundinacea* L.
17. *Sporobolus vaginaeflorus* (Torr.) Wood
18. *Oryzopsis pungens* (Torr.) Hitchc. (*Oryzopsis canadensis*)
19. *Oryzopsis asperifolia* Michx.
20. *Paspalum ciliatifolium* Michx. var. *Muhlenbergii* (Nash) Fernald (*Paspalum setaceum*)
21. *Panicum oligosanthos* Schultes var. *Scribnerianum* (Nash) Fernald (*Panicum laxiflorum*)

¹ The binomial italicized and given in parentheses is that employed by Harris.

22. *Scirpus hudsonianus* (Michx.) Fern. (*Eriophorum alpinum*)
23. *Eleocharis Smallii* Britton (*Eleocharis palustris*)
24. *Eleocharis tenuis* (Willd.) Schultes
25. *Eleocharis tuberculosa* (Michx.) R. & S². Apparently this is the second report for New Hampshire, though the earliest collection (July 27, 1897).
26. *Carex siccata* Dewey
27. *C. cephalophora* Muhl.
28. *C. exilis* Dewey
29. *C. angustior* Mackenzie (*C. echinata* var. *microstachys*)
30. *C. cephalantha* (Bailey) Bicknell (*C. echinata* var. *cephalantha*)
31. *C. Deweyana* Schwein.; probably this species but specimen was immature when collected.
32. *C. tenera* Dewey (*Carex straminea*)
33. *C. brevior* (Dewey) Mackenzie (*Carex straminea* var. *brevior*)
34. *C. umbellata* Schkuhr
35. *C. anceps* Muhl.
36. *C. debilis* Michx. var. *Rudgei* Bailey
37. *C. pallescens* L. var. *neogaea* Fern. (*C. pallescens*)
38. *C. Swanii* (Fern.) Mackenzie (*Carex virescens*)
39. *C. lanuginosa* Michx. (*C. filiformis* var. *latifolia*)
40. *C. comosa* Boott (*C. Pseudo-Cyperus* var. *americana*)
41. *C. vesicaria* L. var. *monile* (Tuckerm.) Fern. (*C. monile*)
42. *Spirodela polyrhiza* (L.) Schleid.
43. *Xyris caroliniana* Walt.
44. *Juncus militaris* Bigel.
45. *Allium Schoenoprasum* L. var. *sibiricum* (L.) Hartm. (*Allium Schoenoprasum*)
46. *Clintonia borealis* (Ait.) Raf.
47. *Habenaria clavellata* (Michx.) Spreng. var. *ophioglossoides* Fern. (*H. tridentata*)
48. *H. Hookeri* Torr.
49. *H. orbiculata* (Pursh) Torr.
50. *H. fimbriata* (Ait.) R. Br.
51. *Spiranthes vernalis* Engelm. & Gray (*Spiranthes praecox*)
52. *Goodyera repens* (L.) R. Br. var. *ophioides* Fern. (*Goodyera repens*)
53. *Myrica pensilvanica* Loisel. (*M. cerifera*)
54. *Boehmeria cylindrica* (L.) Sw.
55. *Paronychia canadensis* (L.) Wood (*Anychia capillacea*)
56. *Stellaria graminea* L.
57. *Ranunculus flabellaris* Raf. (*R. delphinifolius*)
58. *Hepatica americana* (DC.) Ker. (*H. triloba*)
59. *Anemone cylindrica* Gray
60. *Berteroa incana* (L.) DC.

² Pease, A. S. RHODORA 26; 37, 1924.

61. *Camelina sativa* (L.) Crantz
62. *Sisymbrium altissimum* L.
63. *Barbarea vulgaris* R. Br. (*Barbarea vulgaris* var. *arcuata*)
64. *Cardamine pensylvanica* Muhl. (*C. flexuosa*)
65. *Pyrus melanocarpa* (Michx.) Willd. (*P. arbutifolia* var. *melanocarpa*)
66. *Pyrus aucuparia* (L.) Ehrh. (*Sorbus americana*)
67. *Crataegus succulenta* Schrad. var. *macracantha* (Lodd.) Eggleston (*C. coccinea* var. *macracantha*)
68. *Potentilla recta* L. This weed, now abundant in central and southern New Hampshire, was first collected by Harris in 1915.
69. *Potentilla simplex* Michx. (*P. canadensis*)
70. *Geum laciniatum* Murr. (*G. virginianum*)
71. *G. aleppicum* Jacq. var. *strictum* (Ait.) Fern. (*G. album*)
72. *Trifolium procumbens* L.
73. *Vicia tetrasperma* (L.) Moench
74. *Vicia angustifolia* (L.) Reichard (*V. sativa* var. *angustifolia*)
75. *Polygala sanguinea* L.
76. *Acalypha rhomboidea* Raf. (*Acalypha virginica*) This is decidedly atypical material, but most closely resembles *A. rhomboidea*.
77. *Euphorbia corollata* L.
78. *Callitriche heterophylla* Pursh (*Najas flexilis*)
79. *Rhus typhina* L.
80. *Vitis aestivalis* Michx. var. *argentifolia* (Munson) Fernald (*V. aestivalis*)
81. *Viola palmata* L.
82. *Decodon verticillatus* (L.) Ell. var. *laevigatus* Torr. & Gray (*Decodon verticillatus*)
83. *Myriophyllum tenellum* Bigel.
84. *Heracleum lanatum* Michx.
85. *Angelica atropurpurea* L.
86. *Cornus stolonifera* Michx.
87. *Chimaphila maculata* (L.) Pursh
88. *Moneses uniflora* (L.) Gray (*M. grandiflora*)
89. *Lappula echinata* Gilibert (*Echinosperrum virginicum*)
90. *Myosotis stricta* Link
91. *Physalis heterophylla* Nees. (*P. virginiana*)
92. *Scrophularia lanceolata* Pursh (*S. nodosa* var. *marilandica*)
93. *Pentstemon hirsutus* (L.) Willd. (*P. pubescens*)
94. *Veronica officinalis* L.
95. *V. peregrina* L.
96. *Orobanche uniflora* L. (*Aphyllon uniflorum*)
97. *Eupatorium sessilifolium* L.
98. *Eupatorium rugosum* Houtt. (*E. urticaefolium*)
99. *Solidago puberula* Nutt.

100. *Solidago ulmifolia* Muhl.
101. *Aster cordifolius* L.
102. *Aster ericoides* L. (*Aster multiflorus*)
103. *Aster puniceus* L.
104. *Antennaria neodioica* Greene
105. *A. neglecta* Greene
106. *Bidens cernua* L.
107. *Tussilago Farfara* L.
108. *Senecio vulgaris* L.
109. *Cirsium muticum* Michx. (*Cnicus muticus*)
110. *Tragopogon pratensis* L.
111. *Taraxacum laevigatum* (Willd.) DC. (*T. erythrospermum*)
112. *Lactuca scariola* L. var. *integrata* Gren. & Godr.
113. *Prenanthes trifoliolata* (Cass.) Fern.
114. *Prenanthes altissima* L.
115. *Hieracium aurantiacum* L.

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HYPERICUM ADPRESSUM Bart., forma **spongiosum** (Robinson),
stat. nov. Var. *spongiosum* Robinson in RHODORA, iv. 136, t.
37, figs. 10 and 11 (1902).

This form or state, resulting from deep immersion in water, is surely not a geographic variety; but extreme plants, like the type-colony, with the heavily spongy lower half or third of the stem 2.5-4 or more dm. high, the total height of the flowering stem up to 1 m. and the leaves exceptionally broad and flat, is so strikingly unlike the relatively slender and narrower-leaved typical *Hypericum adpressum* that it is convenient to have a formal name for it.—M. L. FERNALD.

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